

Joshua N. Cooper

Department of Mathematics
LeConte College
1523 Greene Street, Room 314D
University of South Carolina
Columbia, SC 29208, USA

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Consulting Faculty Member of USC Jewish Studies Program
<http://www.cas.sc.edu/jstp/>

Areas of Interest: *Quasirandomness, Spectral Hypergraph Theory, Discrete Geometry, Universal Cycles, Combinatorial Number Theory, Coding Theory, Extremal Graphs and Permutations.*

Education

Ph.D. Mathematics, University of California, San Diego. *Jun 2003*

Thesis Title: Quasirandom Permutations.

Advisors: Professors Fan Chung and Ronald L. Graham.

B.S. Mathematics (GPA 5.0/5.0), MIT, Cambridge, MA. *Dec 1998*

High School Diploma, Mass. Acad. of Math. and Sci., Worcester, MA. *May 1995*

Research Publications Accepted/Printed

26. J. N. Cooper, A. Dutle, Greedy Galois Games, *American Mathematical Monthly*, to appear.
25. J. N. Cooper, C. Heitsch, Generalized Fibonacci Recurrences and the Lex-Least de Bruijn Sequence, *Advances in Applied Mathematics*, to appear.
24. J. N. Cooper, A. Dutle, Spectra of Hypergraphs, *Linear Algebra and its Applications*, to appear.
23. J. N. Cooper, J. Lenz, T. D. LeSaulnier, P. S. Wenger, D. B. West, Uniquely C_4 -Saturated Graphs, *Graphs and Combinatorics* **28** no. 2 (2012), 189–197.
22. J. N. Cooper, A. Petrarca, Symmetric and Asymptotically Symmetric Permutations, *Contributions to Disc. Math.*, to appear.
21. J. N. Cooper, S. Fenner, S. Purewal, Monochromatic Boxes in Colored Grids, *SIAM Journal of Discrete Mathematics*, *SIAM J. Discrete Math.* **25** no. 3 (2011), 1054–1068.
20. J. N. Cooper, L. Lu, Graphs with Asymptotically Invariant Degree Sequences under Restriction, *Internet Mathematics*, **7**, no. 1 (2011), 67–80.

19. J. N. Cooper, R. Ellis, Linearly Bounded Liars, Adaptive Covering Codes, and Deterministic Random Walks, *J. Combinatorics* Special Issue Dedicated to Joel Spencer, **1** no. 3–4 (2010), 307–334.
18. J. N. Cooper, B. Doerr, T. Friedrich, J. Spencer, Deterministic Random Walks on Regular Trees, *Random Structures & Algorithms*, **37**, no. 3 (2010), 353–366.
17. J. N. Cooper, M. Walters, Iterated Point-Line Configurations Grow Doubly-Exponentially, *Discrete & Computational Geometry*, **43**, no. 3 (2010), 554–562.
16. J. N. Cooper, C. Heitsch, The Discrepancy of the Lex-Least de Bruijn Sequence, *Discrete Mathematics* **310** (2009), no. 6–7, 1152–1159.
15. J. N. Cooper, B. Doerr, T. Friedrich, J. Spencer, Deterministic Random Walks on Regular Trees, in S. Teng (Ed.), Proceedings of the ACM-SIAM Symposium on Discrete Algorithms (SODA 2008), San Francisco, USA, 766–772.
14. J. N. Cooper, B. Doerr, T. Friedrich, J. Spencer, Deterministic Random Walks on Regular Trees (extended abstract), *Electronic Notes in Discrete Mathematics* **29** (2007), 509–513.
13. J. N. Cooper, B. Doerr, J. Spencer, G. Tardos, Deterministic Random Walks on the Integers, *European Journal of Combinatorics*, **28** (2007), no. 8, 2072–2090.
12. J. N. Cooper, D. Eichhorn, K. O’Byrant, Reciprocals of Binary Power Series, *International Journal of Number Theory*, **2** (2006), no. 4, 499–522.
11. J. N. Cooper, B. Doerr, J. Spencer, G. Tardos, Deterministic Random Walks, *Proceedings of the Workshop on Analytic Algorithmics and Combinatorics (ANALCO 2006)*, 185–197, Philadelphia, PA, SIAM 2006.
10. J. N. Cooper, A Permutation Regularity Lemma, *Electronic J. Comb.* **13** (2006), #R22.
9. J. N. Cooper and J. Spencer, Simulating a Random Walk with Constant Error, *Combinatorics, Probability, and Computing*, **15** (2006), no. 06, 815–822.
8. J. N. Cooper, Continued Fractions with Partial Quotients Bounded in Average, *Fibonacci Quarterly* **44** (2006), no. 4, 297–301.
7. J. N. Cooper, B. Doerr, J. Spencer, G. Tardos, Deterministic Random Walks on the Integers, in S. Felsner (Ed.), European Conference on Combinatorics, Graph Theory and Applications (EuroComb) 2005, volume AE of Discrete Mathematics & Theoretical Computer Science, pages 73–76.
6. J. N. Cooper and J. Solymosi, Collinear Points in Permutations, *Ann. Comb.* **9** (2005), no. 2, 169–175.
5. J. N. Cooper, Quasirandom Arithmetic Permutations, *Journal of Number Theory* **114** (2005), no. 1, 153–169.
4. J. N. Cooper and R. L. Graham, Generalized de Bruijn Cycles, *Annals of Combinatorics* **8** (2004), no. 1, 13–25.

3. F. Chung and J. N. Cooper, De Bruijn Cycles for Covering Codes, *Random Structures and Algorithms* **25** (2004), no. 4, 421–431.
2. J. N. Cooper, Quasirandom Permutations, *Journal of Combinatorial Theory, Series A* **106** (2004), no. 1, 123–143.
1. J. N. Cooper, R. B. Ellis, A. B. Kahng, Asymmetric Binary Covering Codes, *Journal of Combinatorial Theory, Series A* **100** (2002), no. 2, 232–249.

Research Publications in Process

35. J. N. Cooper, B. Kay, Graham's Tree Reconstruction Conjecture and a Waring-Type Problem on Partitions, submitted.
34. T. Carroll, J. N. Cooper, P. Tetali, Counting Antichains and Linear Extensions in Generalizations of the Boolean Lattice, submitted.
33. J. N. Cooper, Deducing Vertex Weights from Empirical Occupation Times, submitted.
32. J. N. Cooper, Collinear Triple Hypergraphs and the Finite Plane Kakeya Problem, submitted.
31. J. N. Cooper, Polynomial Interpolation Matroids, in preparation.
30. T. Carroll, J. N. Cooper, High Convolution-Powers of a Discrete Uniform Distribution, in preparation.
29. F. Chung and J. N. Cooper, De Bruijn Codes for Rooted Hypergraphs, in revision.
28. J. N. Cooper, Erdős-Hajnal Sets and Semigroup Decompositions, in revision.
27. J. N. Cooper, C. Poirel, Note on the Pythagorean Triple System, in revision.

Employment

Associate Professor Department of Mathematics, University of South Carolina.	<i>Aug 2010 – Present</i>
Palmetto Assistant Professor Department of Mathematics, University of South Carolina.	<i>Aug 2006 – Present</i>
Post-doctoral Researcher Department of Mathematics, UCSD.	<i>Apr 2006 – Aug 2006</i>
Senior Scientist Combinatorial Structures and Algorithms Group, ETH-Zürich.	<i>Sep 2005 – Mar 2006</i>
Instructor	<i>Oct 2005 – Dec 2005</i>

Quasirandomness and Regularity, ETH-Zürich.

Instructor, Vector Analysis

Jun 2005 – Aug 2005

Courant Institute of Mathematical Sciences, NYU.

Instructor, Calculus I

Oct 2004 – Dec 2004

Courant Institute of Mathematical Sciences, NYU.

NSF Mathematical Sciences Post-Doc. Research Fellow

Sep 2003 – Aug 2005

Courant Institute of Mathematical Sciences, NYU.

Sponsor: Professor Joel Spencer.

Consultant

Sep 2003 – Dec 2003

Microsoft Research (Theory Group), Redmond, WA.

Research Associate

Sep 2003 – Dec 2003

University of Washington, Seattle, WA.

Research Assistant

Jun 2003 – Sep 2003

University of California, San Diego.

Supervisor: Professor Ronald L. Graham.

Teaching Assistant

Sep 1999 – Jun 2003

University of California, San Diego.

Instructor for sections in courses including Linear Algebra, Introductory Calculus, Multivariable Calculus, Algorithms, Cryptography, Financial Mathematics. Also served as grader, tutor, and occasional lecturer.

Research Assistant

Jun 2002 – Sep 2002

University of California, San Diego.

Supervisor: Professor Ronald L. Graham.

Research Assistant

Jun 2001 – Sep 2001

University of California, San Diego.

Supervisor: Professor Fan Chung Graham.

Researcher/Programmer

Jun 2000 – Sep 2000

DTAI, Inc. (now Kratos Defense & Security Solutions), San Diego, CA.

Application of computational geometry to spatiotemporal data storage/query, interfacing in-house software with open source code, evaluating applications of constraint logic programming to geospatial data systems. Programming in Java, XIS, PROLOG.

Quality Assurance Programmer

Jun 1999 – Sep 1999

Curl Corporation, Cambridge, MA.

Quality Assurance testing of Curl language and development environment. Programming in Curl, C++.

Webmaster/Software Developer/Graphics Designer

Jul 1996 – Sep 1998

Sanjeonics, Inc, South Boston, MA.

Website design/management, development of software for small business valuation and credit reporting, systems administration. Programming in TurboPascal, C++, HTML, Perl, Java, 80x86 Assembly.

Teacher

Mar 1996 – May 1998

Combinatorics, MIT High School Studies Program (HSSP), Cambridge, MA.

Teaching basic combinatorics to high school students in ten weekly classes each Spring.

Course development and student evaluation.

Conferences/Workshops Attended

2012 Joint Mathematics Meeting *Jan 2012*
Hynes Convention Center, Boston, MA.

Atlanta Lecture Series in Combinatorics and Graph Theory IV *Nov 2011*
Georgia State University, Atlanta, GA.

AMS Southeastern Sectional Meeting *Sep 2011*
Wake Forest University, Winston-Salem, NC.

Random Structures & Algorithms 2011 *May 2011*
Emory University, Atlanta, GA.

SIAM-SEAS 2011 *Apr 2011*
University of North Carolina at Charlotte, Charlotte, NC.

AMS Southeastern Sectional Meeting *Mar 2011*
Georgia Southern University, Statesboro, GA.

Atlanta Lecture Series in Combinatorics and Graph Theory II *Feb 2011*
Georgia State University, Atlanta, GA.

AMS-MAA Joint Mathematics Meeting *Jan 2011*
New Orleans, LA.

Atlanta Lecture Series in Combinatorics and Graph Theory I *Nov 2010*
Emory University, Atlanta, GA.

25th Mini-Conference on Discrete Mathematics and Algorithms *Oct 2010*
Clemson University, Clemson, SC.

Triangle Lectures in Combinatorics *Sep 2010*
Duke University, Durham, NC.

SIAM Conference on Discrete Mathematics *Jun 2010*
Hyatt Regency, Austin, TX.

41st Southeastern Combinatorics, Graph Theory, & Computing Florida Atlantic University, Boca Raton, FL.	<i>Mar 2010</i>
Palmetto Number Theory Series XI University of South Carolina, Columbia, SC.	<i>Dec 2009</i>
24th Mini-Conference on Discrete Mathematics and Algorithms Clemson University, Clemson, SC.	<i>Oct 2009</i>
Research Experience for Graduate Students University of Illinois, Urbana-Champaign, Urbana, IL.	<i>Jul 2009</i>
CanADAM 2009 Centre de Recherches Mathématiques, Montréal, Quebec, Canada.	<i>May 2009</i>
SERMON 2009 University of North Carolina, Greensboro, Greensboro, NC.	<i>Apr 2009</i>
SIAM-SEAS 2009 Conference University of South Carolina, Columbia, SC.	<i>Apr 2009</i>
Ulam Centennial Conference University of Florida, Gainesville, FL.	<i>Mar 2009</i>
AMS-MAA Joint Mathematics Meeting #1046 Washington, DC.	<i>Jan 2009</i>
23th Mini-Conference on Discrete Mathematics and Algorithms Clemson University, Clemson, SC.	<i>Oct 2008</i>
AMS Southeastern Section Meeting #1044 University of Alabama, Huntsville, AL.	<i>Oct 2008</i>
SIAM Conference on Discrete Mathematics University of Vermont, Burlington, VT.	<i>Jun 2008</i>
Int. Conf. on Interdisciplinary Math. & Stat. Techniques University of Memphis, Memphis, TN.	<i>May 2008</i>
New Directions in Algorithms, Combinatorics, and Optimization Georgia Tech, Atlanta, GA.	<i>May 2008</i>
MAA Southeastern Sectional Meeting The Citadel, Charleston, NC.	<i>Mar 2008</i>
SAMSI CDI Workshop: Cyber-enabled Discovery and Innovation Radisson RTP, Research Triangle Park, NC.	<i>Nov 2007</i>

22th Mini-Conference on Discrete Mathematics and Algorithms Clemson University, Clemson, SC.	<i>Oct 2007</i>
Mini-Conference on Applied Combinatorics University of South Carolina, Columbia, SC.	<i>Oct 2007</i>
2007 AMS Fall Central Section Meeting DePaul University, Chicago, IL.	<i>Oct 2007</i>
First Joint International Meeting of the AMS and PTM University of Warsaw, Warsaw, Poland.	<i>Jul-Aug 2007</i>
Random Combinatorial Structures Conference University of Nebraska, Lincoln, NE.	<i>Apr 2007</i>
2007 AMS Spring Southeastern Section Meeting Davidson College, Davidson, NC.	<i>Mar 2007</i>
Workshop on Complex Networks and their Applications Georgia Institute of Technology, Atlanta, GA.	<i>Jan 2007</i>
2006 AMS Fall Southeastern Section Meeting University of Arkansas, Fayetteville, AR.	<i>Nov 2006</i>
DIMACS/DIMATIA/Renyi Combinatorial Challenges Meeting Rutgers/DIMACS, Piscataway, NJ.	<i>Apr 2006</i>
Conference on Probabilistic Combinatorics & Algorithms: A Conference in Honor of Joel Spencer's 60th Birthday Rutgers/DIMACS, Piscataway, NJ.	<i>Apr 2006</i>
Workshop on Analytic Algorithmics & Combinatorics (ANALCO06) Radisson Hotel Miami Downtown, Miami, FL.	<i>Jan 2006</i>
Combinatorial and Additive Number Theory 2005 City University of New York, New York, NY.	<i>May 2005</i>
AMS 2005 Spring Eastern Section Meeting University of Delaware, Newark, Delaware.	<i>Apr 2005</i>
Learn & Workshop: Random Graphs and Probabilistic Methods Humboldt-Universität, Berlin, Germany.	<i>Mar 2005</i>
DOCCOURSE: Modern Ramsey Theory Prague, Czech Republic.	<i>Feb 2005</i>
2005 Annual AMS/MAA Joint Mathematics Conference	<i>Jan 2005</i>

Atlanta, GA.

Generalizations of de Bruijn Cycles and Gray Codes

BIRS, Banff, Alberta, Canada.

Dec 2004

DIMACS/DIMATIA/Rényi Working Group on Extremal Combinatorics II

Rutgers/DIMACS, Piscataway, NJ.

Oct 2004

Graph Drawing 2004

CCNY, New York, NY.

Oct 2004

Mini-Workshop on Harmonic Analysis of Boolean Functions

Yale University, New Haven, CT.

Sep 2004

SIAM Conference on Discrete Mathematics

Loews Vanderbilt Plaza Hotel, Nashville, TN.

Jun 2004

**NSF/CBMS Regional Research Conference in Mathematical Sciences on The
Combinatorics of Large Sparse Graphs**

Cal State San Marcos, San Marcos, CA.

Jun 2004

Combinatorial and Additive Number Theory 2004

CUNY Graduate Center, New York, NY.

May 2004

2004 CombinaTexas

Texas A&M, College Station, TX.

Apr 2004

2003 West Coast Number Theory Conference

Asilomar Conference Center, Monterey, CA.

Dec 2003

Integers 2003 Conference

State University of West Georgia, Carrollton, GA.

Nov 2003

Introductory Workshop in Discrete and Computational Geometry

MSRI, Berkeley, CA.

Aug 2003

2003 Annual AMS/MAA Joint Mathematics Conference

Baltimore Convention Center, Baltimore, MD.

Jan 2003

West Coast Number Theory Conference

San Francisco State University, San Francisco, CA.

Dec 2002

DIMACS Workshop on Geometric Graph Theory

Rutgers University, Piscataway, NJ.

Oct 2002

SIAM Conference on Discrete Mathematics

Handlery Hotel & Resort, San Diego, CA.

Aug 2002

NSF/CBMS Regional Research Conference in Mathematical Sciences on Geometric Graph Theory *May 2002*
University of North Texas, Denton, TX.

2002 Annual AMS/MAA Joint Mathematics Conference *Jan 2002*
San Diego Convention Center, San Diego, CA.

42nd Annual Symposium on Foundations of Computer Science *Oct 2001*
Tropicana Hotel, Las Vegas, NV.

26th Annual Combinatorics, Graph Theory, and Computing *Mar 1995*
Florida Atlantic University, Boca Raton, FL.

25th Annual Combinatorics, Graph Theory, and Computing *Mar 1994*
Florida Atlantic University, Boca Raton, FL.

Activities and Honors

- Editorial Board member of *Involve*.
- Organizer of USC Combinatorics Seminar (Aug. 2009–Present).
- Co-organizer of Special Session on New Developments in Graph Theory at AMS Southeastern Sectional, Sep. 2011.
- Proposal reviewer for National Science Foundation (Fall '10), National Security Agency (Fall '10), and Fonds Québécois de la Recherche sur la Nature et les Technologies (Fall '10).
- Co-PI (with Linyuan Lu) of National Science Foundation (NSF) Division of Undergraduate Education: Course, Curriculum, and Laboratory Improvement (Type 2), “Collaborative Research: STEM Real World Applications of Mathematics” (DUE-CCLI-1020692) 2010-2012.
- PI of National Science Foundation (NSF) Division of Mathematical Sciences: Algebra, Number Theory, and Combinatorics Award, “Combinatorial Quasirandomness and its Applications” (DMS-ANTC-1001370) 2010–2013.
- University of South Carolina Distinguished Undergraduate Research Mentor 2009.
- Co-organizer of Probabilistic and Extremal Combinatorics mini-symposium at SIAM–SEAS 2009.
- Invitation as Plenary Speaker at “Random Combinatorial Structures” conference, University of Nebraska, Lincoln, 4/07.
- USC Organizer for Virginia Tech Regional Mathematics Contest (VTRMC) 2010 & 2011.
- Carolina Scholar Mentor for 2008–09, 2009–10, 2010–11, 2011–12.

- Mentor for Magellan Scholar Anna Kirkpatrick, Nicholas Smith, Bill Kay, and Andrew Mamroth.
- Mentor for Magellan Scholar Joshua King, awarded First Prize at poster session of USC Discovery Day '11.
- Mentor for Magellan Scholar Chris Poirel, awarded First Prize at poster session of USC Discovery Day '08.
- Member of the Interdisciplinary Mathematics Institute IMI-USC (9/06–Present).
- Honors College Mathematics Major Adviser (9/06–Present).
- IMI Executive Committee (9/07–12/08), USC Math Web Committee (9/06–Present), USC Math Undergraduate Advisor (9/06–Present), USC Math Hiring Committee (9/07–5/08, 9/10–5/11), USC Math Qualifying Exam Committee (9/07–5/08), USC Math Undergraduate Advisory Council (9/08–Present), USC Faculty Senator (9/08–5/11), USC Math Event Planning Committee (9/08–Present), USC Math Grant Mentoring Committee (8/11–Present).
- Co-organizer of the “Extremal and Probabilistic Combinatorics” AMS Special Session at the 2006 Fall Southeastern Section Meeting, Fayetteville, AR, November 3–4, 2006.
- Co-organizer of the “Probabilistic Paradigms in Combinatorics” AMS Special Session at the 2005 Spring Eastern Section Meeting, Newark, DE, April 2–3, 2005.
- Two months invited visit to the Rényi Institute, Budapest, Feb 2005–Mar 2005.
- Second-place winner (with Reid Andersen and Robert Ellis) of Graph Drawing Contest at the 2004 Graph Drawing Conference in New York, NY.
- Recipient of National Science Foundation (NSF) Mathematical Sciences Postdoctoral Research Fellowship (MSPRF-0303272) 2003–2006 to study at New York University (NYU) with Professor Joel Spencer.
- Graduate Assistance in Areas of National Need (GAANN) Fellow, 2001.
- Co-organizer of the Combinatorial Structures from Discrete Geometry Mini-Symposium at the August 2002 SIAM Conference on Discrete Mathematics, San Diego, CA.
- Referee for Elec. J. Comb., Comp. Geom.: Theory and Appl., J. Comb. Theory Series A, SIAM J. Comp., SIAM J. Disc. Math., J. Integer Sequences, Math. Research Letters, Ars Combinatoria, Combinatorica, J. Design Theory, Discrete Math., Discrete Appl. Math., Ann. Comb., J. Comb., Networks, American Math. Monthly, Random Structures & Alg., Graphs & Comb., Integers, Disc. & Comp. Geom., Comb. Prob. & Comp., Inf. Proc. Letters, Appl. Anal. & Disc. Math., STOC, SODA, ALENEX, LAGOS.
- Invited Representative for Graduate Students to January 2002 Mathematical Association of America Board of Governors Meeting, San Diego, CA.
- Administrator of MathStorm, a student-run mathematics consulting service for researchers at UCSD.

- Recipient of National Merit Scholarship Award, 1995.

Presentations

The Minimum Number of Givens in a Fair Sudoku Puzzle is 17 Hudson Colloquium, Armstrong Atlantic State University, Savannah, GA.	<i>Mar 2012</i>
Deterministic Random Walks Wake Forest University, Winston-Salem, NC.	<i>Mar 2012</i>
The Minimum Number of Givens is 17! Pi Mu Epsilon / Gamecock Math Club Sudoku Contest, Columbia, SC.	<i>Jan 2012</i>
Spectra of Hypergraphs Atlanta Lecture Series in Combinatorics and Graph Theory, Atlanta, GA.	<i>Nov 2011</i>
Hall's Theorem for Hypergraphs USC Combinatorics Seminar, Columbia, SC.	<i>Oct 2011</i>
Expander Graphs: Prep. for Dinur's Proof of the PCP Theorem USC Algebra & Logic Seminar, Columbia, SC.	<i>Oct 2011</i>
Spectra of Hypergraphs AMS Southeastern Sectional Meeting, Winston-Salem, NC.	<i>Sep 2011</i>
The Polynomial Interpolation Matroid USC Combinatorics Seminar, Columbia, SC.	<i>Sep 2011</i>
Spectra of Hypergraphs Random Structures & Algorithms 2011, Atlanta, GA.	<i>May 2011</i>
Spectra of Hypergraphs SIAM-SEAS 2011, Charlotte, NC.	<i>Apr 2011</i>
The Smooth Digraph Theorem II USC Algebra and Logic Seminar, Columbia, SC.	<i>Apr 2011</i>
The Smooth Digraph Theorem I USC Algebra and Logic Seminar, Columbia, SC.	<i>Apr 2011</i>
Spectra of Hypergraphs AMS Southeastern Sectional Meeting, Statesboro, GA.	<i>Mar 2011</i>
Playing Fair at Sudoku Pi Mu Epsilon / Gamecock Math Club Sudoku Contest, Columbia, SC.	<i>Feb 2011</i>
The Kun-Szegedy Proof of the Hell-Nešetřil Theorem III USC Algebra and Logic Seminar, Columbia, SC.	<i>Jan 2011</i>

- The Kun-Szegedy Proof of the Hell-Nešetřil Theorem II** *Jan 2011*
USC Algebra and Logic Seminar, Columbia, SC.
- The Kun-Szegedy Proof of the Hell-Nešetřil Theorem I** *Jan 2011*
USC Algebra and Logic Seminar, Columbia, SC.
- The Mathematics of Sudoku** *Oct 2010*
Gathering for Gardner (G4G), Columbia, SC.
- Reconstructing Trees and a Waring-type Problem on Partitions** *Sep 2010*
USC-Sumter Mathematics Seminar, Sumter, SC.
- Reconstructing Trees and a Waring-type Problem on Partitions** *Jun 2010*
SIAM Conference on Discrete Mathematics, Austin, TX.
- Intro. to Expander Graphs & their Appl. to Compressed Sensing III** *Mar 2010*
USC Compressed Sensing Seminar, Columbia, SC.
- Intro. to Expander Graphs & their Appl. to Compressed Sensing II** *Mar 2010*
USC Compressed Sensing Seminar, Columbia, SC.
- Intro. to Expander Graphs & their Appl. to Compressed Sensing I** *Mar 2010*
USC Compressed Sensing Seminar, Columbia, SC.
- Tree Reconstruction and a Waring-Type Problem on Partitions** *Mar 2010*
41st Southeastern Combinatorics, Graph Theory, & Computing Conf., Boca Raton, FL.
- Uniquely C_4 -Saturated Graphs II** *Mar 2010*
USC Combinatorics Seminar, Columbia, SC.
- Uniquely C_4 -Saturated Graphs I** *Feb 2010*
USC Combinatorics Seminar, Columbia, SC.
- Tree Reconstruction and a Waring-Type Problem on Partitions** *Dec 2009*
PANTS XI, Columbia, SC.
- How to Choose a Random Sudoku Board** *Nov 2009*
PME/GMC 3rd Annual Sudoku Championship, Columbia, SC.
- Linearly Bounded Liars, Adaptive Covering Codes, and Deterministic Random Walks** *Sep 2009*
USC Combinatorics Seminar, Columbia, SC.
- The Discrepancy of the Lexicographically Least de Bruijn Cycle** *Apr 2009*
SERMON 2009, Greensboro, NC.
- Liar Games, Optimal Codes, and Deterministic Simulation of Random Walks**

May 2009

Georgia Tech Combinatorics Seminar, Atlanta, GA.

Roto-Router Analysis of the Liar Game

Apr 2009

SIAM-SEAS 2009, Columbia, SC.

Roto-Router Analysis of the Liar Game

Mar 2009

Ulam Centennial Conference, Gainesville, FL.

The Discrepancy of the Lexicographically Least de Bruijn Cycle

Feb 2009

USC Combinatorics Seminar, Columbia, SC.

The Mathematics of Sudoku

Nov 2008

USC Gamecock Math Club/IIME 2008 Sudoku Contest, Columbia, SC.

Monochromatic Boxes in Colored Grids

Oct 2008

2008 Fall AMS Southeastern Section Meeting, Huntsville, AL.

Monochromatic Boxes in Colored Grids

Oct 2008

The 23rd Clemson Mini-Conference, Clemson, SC.

Pythagorean Partition-Regularity and Triple Systems with the Sum Property

Sep 2008

USC Combinatorics Seminar, Columbia, SC.

Triple Systems with the Sum Property

Jul 2008

ETSU-REU Seminar, Johnson City, TN.

Learning Vertex Weights from Sample Mean Occupation Times

May 2008

Int. Conf. on Interdisciplinary Mathematical & Statistical Techniques, Memphis, TN.

Symmetric and Asymptotically Symmetric Permutations II

Mar 2008

USC Combinatorics Seminar, Columbia, SC.

Symmetric and Asymptotically Symmetric Permutations I

Mar 2008

USC Combinatorics Seminar, Columbia, SC.

Ladner's Theorem

Feb 2008

USC Algebra & Logic Seminar, Columbia, SC.

Klee's Measure Problem, Multiobjective Optimization, and Monotone Boolean Functions

Feb 2008

USC Combinatorics Seminar, Columbia, SC.

Discrete Stochastic Differentiation

Oct 2007

Mini-Conference on Applied Combinatorics, Columbia, SC.

Discrete Stochastic Differentiation

Oct 2007

- 2007 AMS Fall Central Section Meeting, Chicago, IL.
- Discrete Stochastic Differentiation** *Sep 2007*
USC Combinatorics Seminar, Columbia, SC.
- Discrete Stochastic Differentiation** *Jul 2007*
First Joint International Meeting of the AMS and PTM, Warsaw, Poland.
- Deterministic Random Walks: Recent Developments** *Apr 2007*
Random Combinatorial Structures Conference, Lincoln, NE.
- Where do power laws come from?** *Apr 2007*
Georgia Tech Seminar, Atlanta, GA.
- Finite Plane Kakeya Problem & Collinear Points in Permutations** *Apr 2007*
Georgia Tech Combinatorics Seminar, Atlanta, GA.
- Deterministic Random Walks** *Mar 2007*
Howard University Mathematics Department Colloquium, Washington, DC.
- Quasirandom Permutations** *Mar 2007*
IIT Mathematics Department Colloquium, Chicago, IL.
- Random Linear Extensions of Grids** *Mar 2007*
IIT Combinatorics Seminar, Chicago, IL.
- Finite Field Kakeya Problem and Collinear Triples in Permutations** *Mar 2007*
2007 AMS Spring Southeastern Section Meeting, Davidson, NC.
- Where Do Power Laws Come From?** *Mar 2007*
2007 AMS Spring Southeastern Section Meeting, Davidson, NC.
- Where Do Power Laws Come From?** *Jan 2007*
Workshop on Complex Networks and their Applications, Atlanta, GA.
- Random Linear Extensions of Grids** *Dec 2006*
Georgia Tech Combinatorics Seminar, Atlanta, GA.
- Random Linear Extensions of Grids** *Nov 2006*
2006 AMS Fall Southeastern Sectional Meeting, Fayetteville, AR.
- Collinear Triple Hypergraphs and the Finite Plane Kakeya Problem**
USC Number Theory Seminar, Columbia, SC. *Oct 2006*
- Random Linear Extensions of Grids** *Sep 2006*
USC Combinatorics Seminar, Columbia, SC.
- Collinear Points in Permutations and the Finite Plane Kakeya Problem**

UCSD Combinatorics Seminar, San Diego, CA.	<i>Jul 2006</i>
Random Linear Extensions of Grids UCSD Combinatorics Seminar, San Diego, CA.	<i>Jun 2006</i>
Foundations of Quasirandomness DIMACS/DIMATIA/Rényi Combinatorial Challenges Meeting, Piscataway, NJ.	<i>Apr 2006</i>
Deterministic Random Walks on the Integers Joel Spencer's 60th Birthday Conference, Piscataway, NJ.	<i>Apr 2006</i>
Deterministic Random Walks on the Integers Mittagsseminar, ETH-Zürich.	<i>Mar 2006</i>
Deterministic Random Walks ANALCO '06, Miami, FL.	<i>Jan 2006</i>
Missing Induced Subgraphs Mittagsseminar, ETH-Zürich.	<i>Oct 2005</i>
What Keeps Me Up At Night Mittagsseminar, ETH-Zürich.	<i>Oct 2005</i>
Inverting Power Series Mod 2 Combinatorial and Additive Number Theory 2005, New York, NY.	<i>May 2005</i>
A Permutation Regularity Lemma AMS 2005 Spring Eastern Section Meeting, Newark, DE.	<i>Apr 2005</i>
Erdős-Hajnal Sets and Semigroup Decompositions Learn & Workshop: Random Graphs and Probabilistic Methods, Berlin, Germany.	<i>Mar 2005</i>
Quasirandom Permutations DOCCOURSE: Modern Ramsey Theory, Prague, Czech Republic.	<i>Feb 2005</i>
Cycles for Other Shapes of Sliding Window Courant Institute Geometry Seminar, New York, NY.	<i>Dec 2004</i>
Erdős-Hajnal Sets and Semigroup Decompositions Princeton Combinatorics Seminar, Princeton, NJ.	<i>Nov 2004</i>
Erdős-Hajnal Sets and Semigroup Decompositions Courant Institute Geometry Seminar, New York, NY.	<i>Nov 2004</i>
Erdős-Hajnal Sets and Semigroup Decompositions DIMACS/DIMATIA/Rényi Working Group on Extremal Combinatorics II, Piscataway, NJ.	<i>Oct 2004</i>
Generalized de Bruijn Cycles	<i>Sep 2004</i>

CUNY Combinatorics Seminar, New York, NY.

A Permutation Regularity Lemma *Jun 2004*
SIAM Conference on Discrete Mathematics, Nashville, TN.

A Permutation Regularity Lemma *Jun 2004*
NSF/CBMS Regional Research Conference in Mathematical Sciences on The Combinatorics of Large Sparse Graphs, San Marcos, CA.

Simulating a Random Walk with Constant Error *Apr 2004*
CombinaTexas, Texas A&M, College Station, TX.

Quasirandom Permutations *Mar 2004*
Courant Institute Probability and Mathematics Physics Seminar, New York, NY.

Partial Quotients Bounded in Average *Dec 2003*
2003 West Coast Number Theory Conference, Monterey, CA.

Quasirandom Permutations *Nov 2003*
University of Washington, Seattle, WA.

Quasirandomness and Fourier Coefficients *Nov 2003*
Texas A&M, College Station, TX.

A Generalization of Zaremba's Conjecture *Nov 2003*
Texas A&M, College Station, TX.

De Bruijn Covering Codes *Nov 2003*
Texas A&M, College Station, TX.

Quasirandomness and Continued Fractions *Nov 2003*
Integers 2003 Conference, Carrollton, GA.

Quasirandom Permutations *Oct 2003*
Microsoft Research, Redmond, WA.

Quasirandom Permutations *Jun 2003*
Thesis Defense, UCSD, San Diego, CA.

Quasirandom Permutations *Feb 2003*
Graph Theory Seminar, Georgia Tech, Atlanta, GA.

Abstract Line Configurations and the Milnor-Thom Theorem *Oct 2002*
Combinatorics Seminar, UCSD, San Diego, CA.

Forbidden Subgraphs and Large Discrepancy *Aug 2002*
SIAM Conference on Discrete Mathematics, San Diego, CA.

- Asymmetric Covering Codes** *Aug 2002*
SIAM Conference on Discrete Mathematics, San Diego, CA.
- Quasirandom Permutations** *Jan 2002*
AMS Joint Mathematics Meetings (# 973), San Diego, CA.
- 4-cycle-free Graphs and Homogeneous Subsets** *Apr 2002*
Combinatorics Seminar, UCSD, San Diego, CA.
- Directed Covering Codes - An Update** *Jan 2002*
Combinatorics Seminar, UCSD, San Diego, CA.
- The Theory of Quasirandom Permutations** *Oct 2001*
Combinatorics Seminar, UCSD, San Diego, CA.
- Matroids and Heart-Shaped Lattices** *Feb 2001*
Combinatorics Seminar, UCSD, San Diego, CA.
- Constructing Small Sets Uniform in Arithmetic Progressions** *Apr 2001*
Combinatorics Seminar, UCSD, San Diego, CA.
- Flawed Subgraphs and Primitive Partitions** *Mar 1995*
26th Annual Combinatorics, Graph Theory, and Computing, Florida Atlantic University, Boca Raton, FL.

Research Advisement

1. Post-doc
 - (a) Kevin Milans (8/2010–Present)
2. PhD
 - (a) Chair: Aaron Dutle (USC, Mathematics PhD Candidate), David Collins (USC, Mathematics PhD Candidate), Mark Walters (USC, Mathematics PhD Recipient 2009)
 - (b) Committee: Kamala Diefenthaler (USC, Mathematics PhD Candidate), Austin Mohr (USC, Mathematics PhD Candidate), Xing Peng (USC, Mathematics PhD Candidate), Andrew Vincent (USC, Mathematics PhD Candidate), Virginia Johnson (USC, Mathematics PhD Candidate), Andrew Dove (USC, Mathematics PhD Candidate), Travis Johnston (USC, Mathematics PhD Candidate), Jessica Nelson (USC, Mathematics PhD Recipient).
3. MS
 - (a) Chair: Bill Kay (USC, Mathematics MS Candidate), Bonny Riemer (USC, Mathematics MS Recipient 2008)
 - (b) Cochair: Brett Ermer (USC, Statistics MS Recipient 2008, joint with John Grego, USC Department of Statistics)

- (c) Committee: Tatiana Orlova (USC, Mathematics MS Recipient 2010), Charles Cavalier (USC, Mathematics MS Recipient 2009)

4. BS

- (a) Bill Kay (USC, BS Mathematics), Andrew Mamroth (USC, BS Mathematics), Andrew Petrarca (USC, BS Nuclear Engineering), Chris Poirel (USC, BS Mathematics), Josh King (USC, BS Mathematics).

5. High School

- (a) Alexander Neal (South Carolina Governor's School for Science and Mathematics, diploma exp. June 2012)